SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

Accredited by NBA-AICTE and Accredited by NAAC – UGC with A+ Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

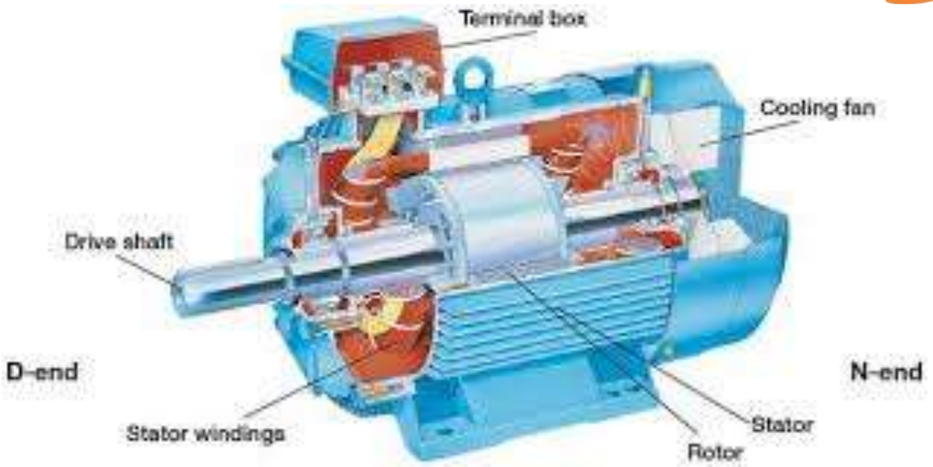
COURSE NAME: 24EET204/ ELECTRICAL MACHINES II

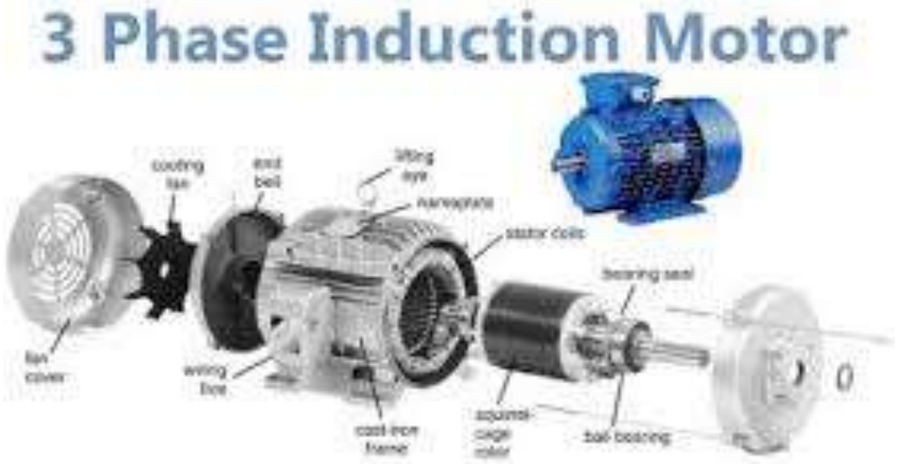
II YEAR / IV SEMESTER

Unit 3 – THREE PHASE INDUCTION MOTOR

Topic 1: Constructional details-Types of rotors

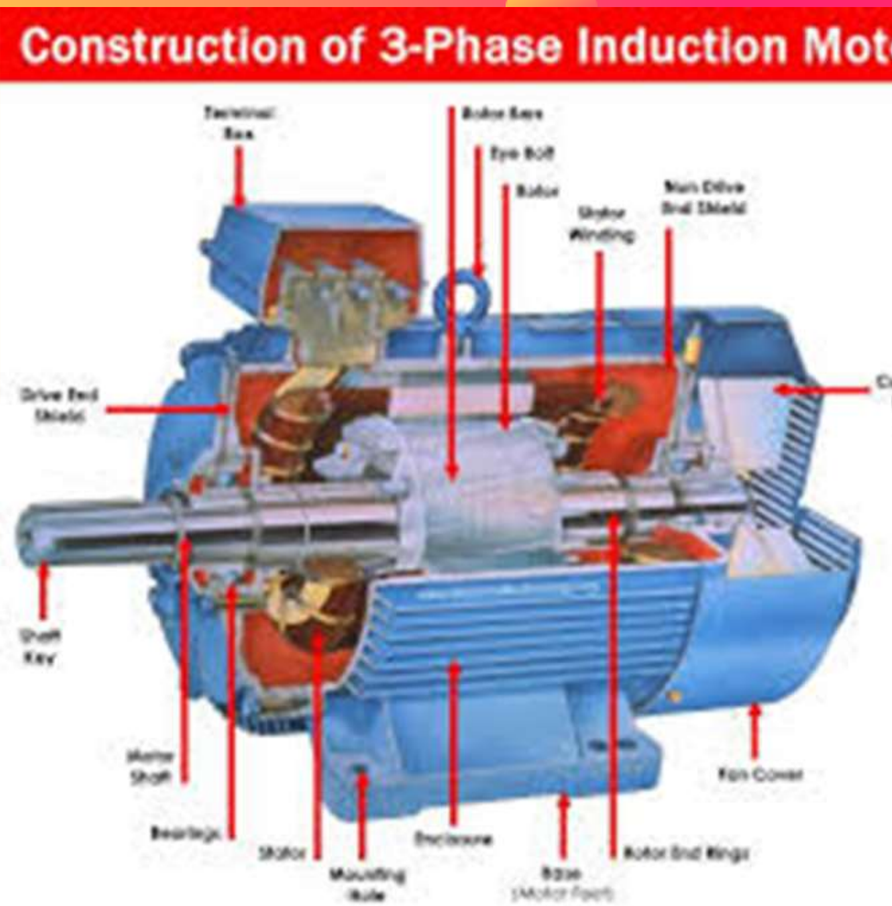
GUESS THE TOPIC NAME…





INDUCTION MOTORS

- Three-phase induction motors are the most common and frequently encountered machines in industry
  – simple design, rugged, low-price, easy maintenance
  – wide range of power ratings: fractional horsepower to 10MW
  – run essentially as constant speed from no-load to full load
  – Its speed depends on the frequency of the power source
    - not easy to have variable speed control
    - requires a variable-frequency power-electronic drive for optimal speed control



INDUCTION MOTOR-CONSTRUCTION

An induction motor has two main parts

– a stationary stator

- consisting of a steel frame that supports a hollow, cylindrical core
- core, constructed from stacked laminations (why?),having a number of evenly spaced slots, providing the space for the stator winding

– a revolving rotor

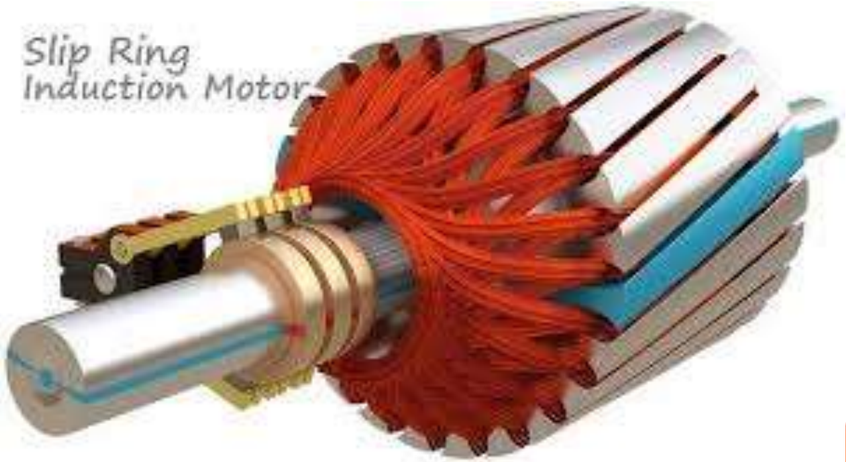
- composed of punched laminations, stacked to create a series of rotor slots, providing space for the rotor winding
- one of two types of rotor windings
- conventional 3-phase windings made of insulated wire (wound-rotor) similar to the winding on the stator
- aluminum bus bars shorted together at the ends by two aluminum rings, forming a squirrel-cage shaped circuit (squirrel-cage)

INDUCTION MOTOR: Rotor

Two basic design types depending on the rotor design

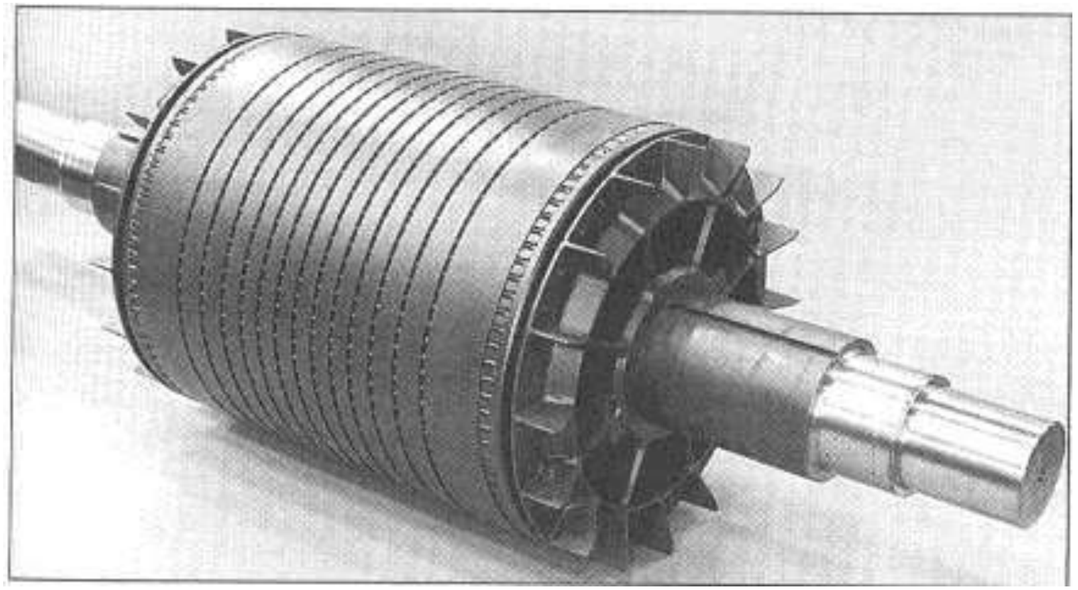
– squirrel-cage: conducting bars laid into slots and shorted at both ends by shorting rings.

– wound-rotor: complete set of three-phase windings exactly as the stator. Usually Y-connected, the ends of the three rotor wires are connected to 3 slip rings on the rotor shaft. In this way, the rotor circuit is accessible.

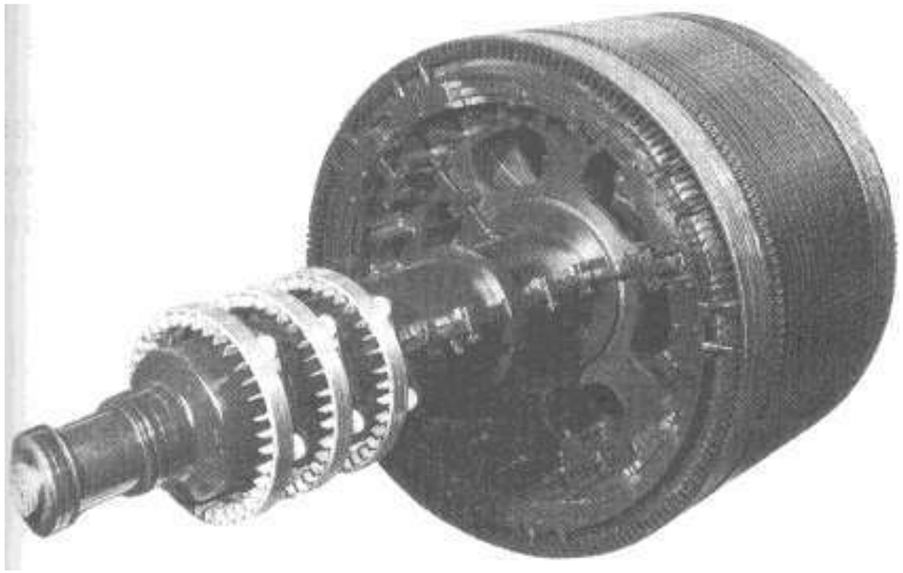


Field Excitation and Exciters

Squirrel cage rotor



Wound rotor



SUMMARY

Construction, Types of Rotors of Induction Motors

KEEP
LEARNING..

Thank u

SEE YOU IN NEXT CLASS